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EXAMINER	
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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/039,103
Filing Date: January 04, 2002
Appellant(s): SMITH ET AL.

Jay R. Pralle
For Appellant

EXAMINER'S ANSWER

MAILED
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This is in response to the appeal brief filed 8/26/04.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The brief does not contain a statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief. Therefore, it is presumed that there are none. The Board, however, may exercise its discretion to require an explicit statement as to the existence of any related appeals and interferences.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

Appellant's brief includes a statement that claims 41, 42, 45-47 and 49-59 stand or fall together.

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

5,491,586	Phillips	2-1996
5,642,222	Phillips	6-1997

4,025,159 McGrath 5-1997

Reflexite Corporation, "REFLEXITE'S RESPONSE TO 3M LETTER ASSERTING INFRINGEMENT OF U.S. PATENTS 5,450,235 AND 5,988,820", Feb. 4, 2002

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 41-42, 45-47 and 49-59 are rejected under 35 U.S.C 103. This rejection is set forth in a prior Office Action, mailed on 10/07/2003, and is provided below.

Claims 41-42, 45-47 and 49-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Phillips '586 or Phillips '222 in view of the "Reflexite's response to 3M letter asserting infringement of U.S. patents 5,450,235 and 5,988,820" and further in view of McGrath.

In re claims 45-46-47, 51-52, 54-55 and 57 Phillips discloses an elastomeric retroreflective sheeting 10 which comprises a first layer (12) comprising a first polymeric material, the first layer having a first and a second major surfaces; and a second layer (14) comprising a second polymeric material, the second layer having a third major surface and having a surface opposite the third major surface in which a retroreflective prism array of cube corner elements (rigid prisms 20) is formed; the surface of the dihedral facets of the cube corner elements are coated with a reflective coating (26) for retroreflecting light (see Fig. 1). The third major surface of the second layer attaches directly or through only a thin coating of transparent adhesive to the second major surface of the first layer (column 4, lines 24-27). Phillips further discloses that the first layer (12) comprises of polyvinyl chloride (column 3, lines 25-36) and the second

layer (14) of a polymer that has a high modulus of elasticity (column 3, lines 48-53) so that the retroreflective prism array can be significantly stretched to conform to an irregular surface while not significantly diminishing its retroreflectivity.

Phillips does not disclose (1) the first layer has an elastic modulus of less than 7x 10^8 pascals and the second layer has an elastic modulus of greater than 20 x 10^8 pascals, and (2) a seal film applied to the cube corner elements to maintain air interface at the cube corner elements.

However, a retroreflective sheeting which comprises a first layer comprising a first polymeric material having an elastic modulus of less than 7 x 10^8 pascals, and a second layer comprising a second polymeric material having an elastic modulus of greater than 20 x 10^8 pascals is known in the art (the quotation below is part of the "REFLEXITE'S RESPONSE TO 3M LETTER ASSERTING INFRINGEMENT OF U.S. PATENTS 5,450,235 AND 5,988,820", page 5, second paragraph, which provides the teachings that are not disclosed in Phillips).

"Reflexite Corporation conducted elastic modulus tests according to ASTM D 882-75b on the components for the body portion, land layer, and cube-corner elements that met thespecification of the SB tape components. Reflexite tests on polyvinyl chloride sheeting that meet the specification of the Renolit H1W polyvinyl chloride sheeting employed in the six mil thickness showed an elastomeric modulus of 1.744 x 10^7 pascals. The ten mil Renolit H1W polyvinyl chloride sheeting displayed an elastomeric modulus of 1.623 x 10^7 pascals. The SB tape had a 0.002 inch (51 micrometers) land layer formed of ICI 393 polyethylene terephthalate (polyester). The

polyester had elastic modulus of 3.377 x 10^9 pascals for the 393 film. The SB tape had ultraviolet cured acrylated epoxy cube-corner formations with web portions having excess oligomer. The acrylated epoxy (F-107) had an elastic modulus of 2.262 x 10^9 pascals."

The "Reflexite's response to 3M letter ..." discloses a retroreflective article, namely "Supper Bright" or SB tape, which comprises a retroreflective sheeting having cube corner elements. The retroreflective sheeting comprises a first layer comprising a first polymeric material (polyvinyl chloride) having an elastic modulus 1.623 x 10^7 pascals, the first layer having a first and a second major surfaces; and a second layer comprising a second polymeric material having an elastic modulus 22.62 x 10^8 pascals for improving the long- lasting durability, long-lasting brightness with flexibility and resistance to impact.Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the teaching of the "Reflexite's response to 3M letter ..." in Phillips for the purpose stated in the "Reflexite's response to 3M letter ...".

Phillips in view of the "Reflexite's response to 3M letter ..." lacks a seal film applied to the cube corner elements to maintain air interface at the cube corner elements. However, the use of a seal film applied to the cube corner elements to maintain air interface at the cube corner elements, is also well known in the art. McGrath discloses a retro reflective sheeting having a seal film applied to the retroreflective sheeting to maintain air interface at the cube corner elements for

providing "a flat rear surface for bonding the sheeting to a substrate" (column 1, lines 51-54, and seal film 36 in Fig. 7).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the teaching of McGrath in Phillips so as to include a sealing film (cover film) in the retroreflective sheeting (Fig. 1) of Phillips for providing a flat rear surface for bonding the sheeting to a substrate and, additionally, for **protecting the reflective coating** formed on the dihedral facets of the cube corner elements from external damages so as to further maintain the retroreflectivity of the sheeting. Also, the modification of the retroreflective sheeting provides an air interface at the cube corner elements. Note that the addition of a seal film would not destroy the properties of the retroreflective sheeting in Fig. 1 of Phillips because in order for the retroreflective prism array that can be significantly stretched to conform to an irregular surface while not significantly diminishing its retroreflectivity, one of ordinary skilled in the art would use a seal film of a polymeric material having an elastic modulus similar to that of the first layer, elastomeric film 12 (see the teaching in Phillips '222, column 5, lines 4-9).

In re claim 41 see column 4, lines 12-14.

In re claim 42 the portion having the thickness between valley (24) and the third major surface of the second layer (14) has been taken as a land layer which is integral with the cube corner elements (20).

In re claims 49-50 see column 3, lines 61-63.

In re claim 53 see column 4, lines 12-14.

In re claim 56 the portion having the thickness between

valley (24) and the third major surface of the second layer (14) has been taken as a land layer which is integral with the cube corner elements (20).

In re claims 58-59 see column 3, lines 61-63.

(11) Response to Argument

The appellant has traversed the above rejection by arguing that one of ordinary skill would have no motivation to apply the seal film teaching of McGrath to the retroreflective structure of Phillips to yield "a seal film applied to the cube corner elements to maintain an air interface at the cube corner elements" (claim 45) or "a seal film applied to the retroreflective sheeting to maintain an air interface at the cube corner elements" (claim 52) because (A) Phillips already provides retroreflective structures that have flat rear surfaces (FIGS. 2A-C and 3A-C); (B) elastomeric layer 44 in FIGS. 2A-C and 3A-C of Phillips already protects the reflective layer 54 present on the prism facets; and (C) the application of the seal film will have ramification on the splitting behavior between cubes.

Before responding to applicant's arguments, the examiner would like to point out (I) that Phillips '222 discloses two embodiments for the retroreflective sheetings. In one embodiment, the first layer (elastomeric film 12) is formed on the window side (16), flat surface, of the second layer (non-extensible retroreflective prism array 14); and in this embodiment, the reflective coating (26) formed on the facet side (18) of the second layer left exposed to the surrounding without any protection (see Fig. 1). In another embodiment, the first layer (elastomeric film 44) is formed over the reflective coating (54) deposited on the facet sides (38) of the second layer (non-extensible retroreflective

prism array 32); in this embodiment, the reflective coating (54) formed on the facet sides is protected by the first layer, and the window side 36 is protected by an elastomeric film (coating 52); the elastomeric film (52) is formed by either bonding an elastomeric film or polymerizing a prepolymer to form an elastomer and has a modulus of elasticity similar to that of the first layer (44) (column 5, lines 4-9, and Figs. 2C and 3C).

(II) That the retroreflective sheetings disclosed in Phillips do not need air interface for retroreflecting incident light because the incident light is retroreflected by the reflective coating (26 in Fig. 1 or 54 in Figs. 2C and 3C). However, as discussed above, Phillips shows the need of protecting the second layer on both sides, the window side (36) and the facet side which has the reflective coating (54), with elastomeric films of the same modulus of elasticity. This is why one of ordinary skill would have motivation to apply the teaching of McGrath in Phillips so as to provide the retro reflective sheeting (10) (Phillips Fig. 1) a seal film applied to the facet side (18) in order to provide a flat rear surface for bonding the sheeting to a substrate and to protect the reflective coating (26). Furthermore, since the first layer (elastomeric film 12) in the retroreflective sheeting (10) already allows the sheeting to significantly stretch while allowing rigid prisms (20) to remain in position with respect to the elastomeric film 12, where the rigid prisms (20) are attached, one of ordinary skill would have recognized that there would be no need to use a seal film that fills all the spaces between the prisms facet for protecting the coating film (26), and that the use of a seal film, applied to the facet side (18), that provides air interface at the cube corner elements would significantly reduce the material use for the seal film. This is also why one of ordinary skill would have

motivation to apply the teaching of McGrath in Phillips so as to provide the sheeting (10) a reduced cost seal film applied to rear of the sheeting in order to provide/maintain an air interface at the cube corner elements, to provide a flat rear surface for bonding the sheeting to a substrate, and to protect the reflective coating (26) from the external damages for maintaining the retroreflectivity of the sheeting (10).

In regard to the arguments A and B, the examiner states that the retroreflective structures depicted in FIGS. 2A-C and 3A-C are directed to a different embodiment which is distinct from the structure depicted in Fig. 1 discussed in the final rejection. In each of FIGS. 2A-C and 3A-C the elastomeric layer 44 is provided on the facet sides 38 of the non-extensible prism array 32; this elastomeric layer 44 already provides a flat rear surface 48 and protects the reflective layer 54. In the contrary, the retroreflective structure depicted in FIG. 1 having elastomeric layer 12 provided on the window side 16 of the non-extensible prism array 14. This structure leaves the reflective layer 26 formed on the dihedral facets of the prisms 20 unprotected; and thus, there is a need of a seal film to protect the reflective layer 26 and to provide a flat rear surface as discussed in the paragraph (II) above .

In regard to the argument C, Phillips teaches an elastomeric coating/film 52 having a modulus of elasticity similar to that of elastomeric 44 applied to the window side 36 of the non-extensible prism array 32 of prisms/cubes 34; Phillips further teaches that the coating/film is formed by either bonding an elastomeric film or polymerizing a prepolymer to form an elastomer (FIGS. 2C and 3C and column 5, lines 1-9). Obviously, the coating/film 52 is provided to protect the window side 36 of the non-extensible

prism array 32 from being damaged by the surrounding. The whole window side of the of the non-extensible prism array 32, i.e. every front surface of each cube, is being bonded to the elastomeric coating/film so as to form a retroreflective structure which can be significantly stretched without significantly diminishing the retroreflective properties of the structure (column 2, lines 58-63). Since the bonding areas (McGrath, FIGS. 6-8) is much less than that of Phillips and since a seal film having a modulus of elasticity similar to that of elastomeric 10 (Phillips, FIG. 1), the bonding network associated with the seal film (McGrath, FIG 1) would not affect to the splitting behavior between the cube-corner prism elements. Therefore, the application of the seal film with the bonding method taught by McGrath to the retroreflective structure of Phillips would not destroy the objective of the teaching of Phillips.

The appellant further states that U.S. Patent 6,143,224 (Bernard et al.) demonstrates challenges and problems associated with the Examiner's modification of Phillips. However, upon reviewing of the Bernard patent, which is not a prior art and is not a prior art of record, the Examiner does not find any teachings that would not motivate one of ordinary skill from applying the teaching of McGrath in Phillips. Also, see the examiner's response to the argument C above.

For the above reasons, it is believed that the rejection should be sustained.

Respectfully submitted,

James Phan
Primary Examiner
Art Unit 2872

JP
August 15, 2005

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